

4WEB Medical Announces Completion of Cell Differentiation and Gene Expression Study

In Vitro Study Establishes Platform for Advancing Implant Technology Through Mechanobiology

CHICAGO, Sept. 25, 2019 /PRNewswire/ -- 4WEB Medical, an orthopedic device company focused on developing innovative implants utilizing its proprietary Truss Implant Technology™ announced today the completion of Phase I in vitro testing that demonstrates the surface roughness on its truss implants stimulates a superior osteogenic response when compared to smooth titanium and PEEK.

The study, conducted by David Rowe, M.D., Director of the Center for Regenerative Medicine and Skeletal Development at the University of Connecticut, concluded that the 4WEB truss implants, which contain hierarchical surface roughness ranging from the macro to nano scale, significantly increased cellular differentiation and osteogenic gene expression over time when compared to smooth titanium and PEEK. Data from this study will be presented next month at the Society for Minimally Invasive Spine Surgery (SMISS) annual meeting.

Lewis Harrison, Vice President of Research and Development at 4WEB Medical said, "We are pleased to have completed the first of several in vitro and in vivo studies that are part of a comprehensive clinical research program intended to fully characterize the effect that the truss implant has on bone formation and improved clinical outcomes. 4WEB's Phase II in vitro study will focus on mechanobiology, the study of how physical forces applied to cells and the corresponding changes in the mechanical properties of those cells contribute to healing. The study has been initiated through a research collaboration with the The Center for Engineering MechanoBiology (CEMB) at the University of Pennsylvania."

4WEB's Truss Implant Technology™ actively participates in the healing process by facilitating bone fusion. Post-operatively, the implant receives load during normal patient activity. The truss structure distributes the load through struts which then transfer strain to adjacent cellular material, triggering a mechanobiologic / osteogenic response. Quantifying the impact of the cellular response on healing could have significant implications on future implant designs.

Kris Radcliff, M.D., spine surgeon at the Rothman Orthopedic Institute stated, "4WEB's mechanobiology study is very exciting. Traditional spine implants are static by the nature of their design which means the impact of the surface roughness on those implants may be limited. A pilot study out of the University of California, San Diego has previously shown that under cyclic loading the combination of 4WEB's hierarchical surface roughness and the kinetic nature of the implant's Advanced Structural Design amplifies osteogenic gene expression when compared to static test samples. The study being conducted at UPENN should answer a lot of questions about implant optimization strategies that lead to better clinical outcomes."

About 4WEB Medical

4WEB Medical is an implant device company founded in 2008 in Dallas, Texas. Thirty years of research in topological dimension theory led to the discovery of a novel geometry, the 4WEB, that can be used as a building block to create high-strength, lightweight web structures. The company leveraged this breakthrough along with cutting-edge 3D printing technology to develop 4WEB Medical's proprietary truss implant platform. The 4WEB Medical product portfolio includes the Cervical Spine Truss System, the Cervical Spine Truss System - Stand Alone, the Anterior Spine Truss System, the Posterior Spine Truss System, the Lateral Spine Truss System and the Osteotomy Truss System. 4WEB is actively developing truss implant designs for knee, hip, trauma and patient specific orthopedic procedures.

For more information about 4WEB Medical, 4WEB's Truss Implant Technology please visit www.4WEBMedical.com.

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